9 VERAGES

426/16

Processes.

1877

Fermenting Vats.

~~Hopping~~

RECORDED

19

~~99~~

99/45

Hops

A.D. 1877, 26th March. N° 1183.

Treating Beer, Ale, &c.

LETTERS PATENT to Philip Embury Lockwood, of 24, Holborn Viaduct, in the City of London, for the Invention of "An Improved Method of Treating Beer, Ale, Porter, and other Beverages of a like Nature."

Sealed the 20th July 1877, and dated the 26th March 1877.

PROVISIONAL SPECIFICATION left by the said Philip Embury Lockwood at the Office of the Commissioners of Patents on the 26th March 1877.

Philip Embury Lockwood, of 24, Holborn Viaduct, in the City of London. "An Improved Method of Treating Beer, Ale, Porter, and other Beverages of a like Nature."

In the ordinary brewing of beer hops are boiled in the wort, by which means certain matters are extracted which are essential to enable the beer to keep and to produce in a large degree the flavours peculiar to the different kinds of beer. The finer and more delicate aromas and flavours of the best hops are however generally introduced into the beer by steeping the hops in the otherwise finished beer when cold, a process known as "dry-hopping." As the beer already holds in solution a considerable quantity of extractive matters it is less solvent of the flavouring matters contained in the hops steeped in it, and a considerable waste of the hops occurs.

It is well known that alcohol is very effectual in extracting the flavours and aromas of hops, I therefore distil from the beer a greater or less proportion of its constituent alcohol, steep hops in the alcohol so obtained, and remix it with the beer. By this means I avoid the introduction of any greater quantity of alcohol than was originally present in the beer, and an important saving is effected in the quantity of hops used for the purposes for which "dry-hopping" is employed. The fermentation of the beer is of course arrested by the heating it undergoes in the process; and to restore briskness I set up fermentation again in the beer by adding any suitable ferment, or impart effervescence by aëration.

[*Price 4d.*]

SPECIFICATION in pursuance of the conditions of the Letters Patent filed by the said Philip Embury Lockwood in the Great Seal Patent Office on the 18th September 1877.

PHILIP EMBURY LOCKWOOD, of 24, Holborn Viaduct, in the City of London. "AN IMPROVED METHOD OF TREATING BEER, ALE, PORTER, AND OTHER BEVERAGES OF A LIKE NATURE."

In the ordinary brewing of beer hops are boiled in the "wort," by which means certain matters are extracted which are essential to enable the beer to keep, and to produce in a large degree the flavours peculiar to the different kinds of beer; but during the process of boiling, more or less of the fine aroma and volatile properties of the hops escapes in the air. It is therefore customary, especially with the better class of beers, to add to the finished beer in the casks, before it is drawn for draught purposes or for bottling, a certain quantity of hops (generally of a finer quality than is used in the boiling), which are steeped for some weeks in the beer to further impart to it the aromatic and other properties of the hops, this process being technically known as "dry-hopping." If hops are steeped in cold water or in cold "wort" before alcohol has been developed in it by fermentation little, if any, of the aromatic and volatile properties of the hops will be extracted. It may therefore be assumed that it is the small proportion of alcohol present in dilution in all fermented beers, which acts as the principal solvent for extracting the aromatic and other properties of the hops during the process of dry-hopping, and from the comparatively small per-centage of alcohol contained in beer a considerable time is needed to obtain the desired result by this process, and as the beer already holds in solution a considerable quantity of extractive matters it is less solvent of the flavouring matters contained in the hops steeped in it, and a considerable waste of hops occurs.

It is well known that alcohol is very effectual in extracting the flavours and aromas of hops, and such an extract might be added to beer, but the alcohol required to make such a tincture is usually very expensive, owing to the heavy excise duty imposed upon it in most countries; and if, to avoid the use of much alcohol, a very strong tincture of hops were made and used, too much of the resinous properties of the hops would be extracted, and an objectionable flavour would be imparted to the beer, as well as a tendency to cloudiness, while if the tincture used were weak, so much would require to be added that the per-centage of alcohol in the beer would be perceptibly increased, and it is also evident that the adding of a small quantity of alcoholic hop tincture cannot thoroughly impart the valuable aromatic properties of the hop to a large quantity of beer.

It is well known that all beers contain a greater or less proportion of alcohol, usually ranging from four to ten per cent., and the method I adopt is as follows:— I place the beer in a vacuum pan, to which a distilling worm or coil is attached, and gently distill off the whole or a considerable part of the alcohol contained in the beer at a temperature of about 130° Fahrenheit, except that for a short time, generally towards the close of the process, I raise the heat to a higher point for the purpose of destroying fermentative germs present in the beer, the alcohol being more volatile than the water of the beer commences, to evaporate when heat is applied, and is collected in a receiver. At first the alcohol is very strong, but it gradually comes over in a more diluted form, and I continue the process until the whole or any desired proportion of the constituent alcohol of the beer is separated and saved. Any convenient form of still may be used for this separation of alcohol from the beer, provided care is taken not to work it continuously during the process at so high a temperature as to affect the flavour of the beer. A certain quantity of hops, preferably of a fine quality, is then steeped in the alcoholic fluid until it has sufficiently absorbed the aroma, flavour, and other valuable properties of the hops, which are then strained off, and the alcoholic fluid is remixed with the beer from which it was separated. By this means the finest and most valuable properties of the hops are imparted to the beer much more quickly and thoroughly than by the process of dry-hopping in the cask, with a saving in the amount of hops required, and without adding a greater proportion of alcohol than previously existed in the beer. The fermentation has been stopped by the heating the beer has undergone in the process, and when, in order to restore briskness the fermentation is revived by adding a small quantity of yeast or any other suitable ferment, the beer is reproduced of a finer and sounder quality than before it was treated. As there will still be some valuable properties left in the hops so used they may afterwards be made use of in brewing or otherwise.

If it is desired to make a lighter beer a less proportion of alcohol may be returned to the beer than was originally present in it.

I first discovered the advantages of applying hops to beer through its own alcohol while occupied in condensing beer, during which process its constituent alcohol must be separated and saved, but I find that any beer may be treated and hopped in the manner I have described with advantage to its flavour and keeping properties. When this mode of applying hops is used during the process of condensing beer the hops should be steeped in the strong alcohol before remixing it with the beer.

In witness whereof, I, the said Philip Embury Lockwood, have hereunto set my hand and seal, this Thirteenth day of September, in the year of our Lord One thousand eight hundred and seventy-seven.

P. E. LOCKWOOD. (L.S.)

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